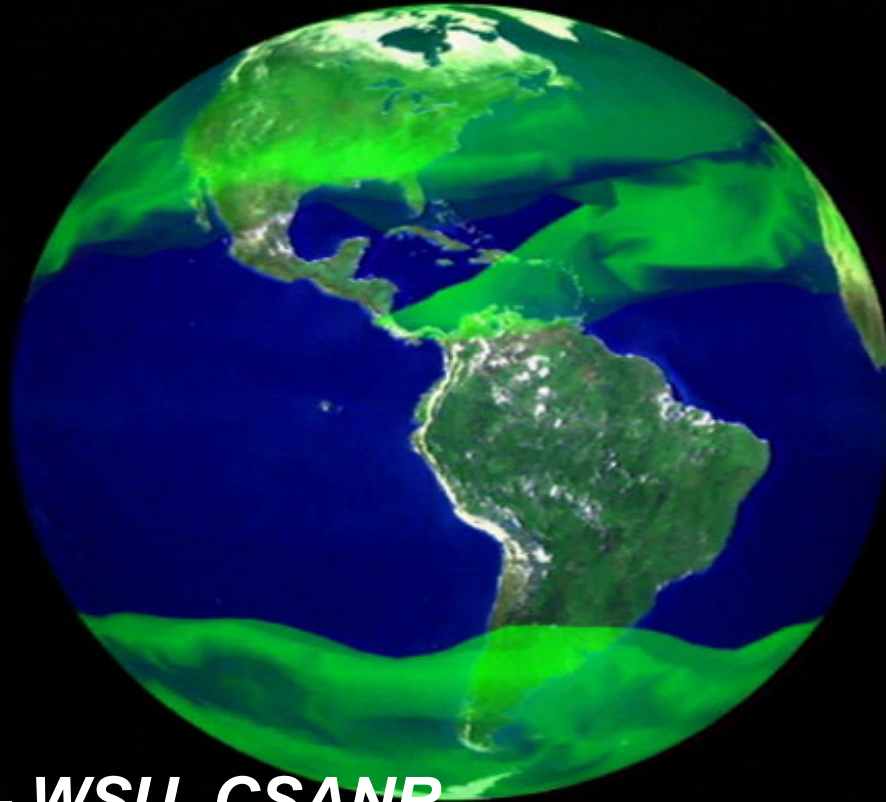


Anaerobic Digestion: Regulatory Concerns



Chad Kruger – WSU, CSANR

*Northwest Dairy Digester Workshop
Sunnyside, WA*

November 18, 2008

Outline

- **Emerging Carbon Market Regulatory Structure**
 - **Ag Sector Carbon Market Workgroup (ASCMW)**
Recommendations – emphasizing approach
 - <http://www.westernclimateinitiative.org/>
- **WA Ecology Co-digestion rule-making process**
- **EPA Air Emissions – Afternoon – Chris Voell**
- **Electricity (Energy) – Afternoon – Dave Sjoding**

IDAHO

EXECUTIVE ORDER NO. 2007-05 ESTABLISHING A STATE POLICY REGARDING THE ROLE OF STATE GOVERNMENT IN REDUCING GREENHOUSE GASES

WCI “Observer”

- 1. The Director of the Department of Environmental Quality shall take a leadership role to work with all state government departments and agencies and shall serve as the central point of contact for coordination and implementation of greenhouse gas reduction efforts and other associated activities.***
- 2. The Director of the Department of Environmental Quality shall develop a greenhouse gas emission inventory and provide recommendations to the Governor on how to reduce greenhouse gas emissions in Idaho, recognizing Idaho's interest in continued growth, economic development and energy security.***

WASHINGTON

EXECUTIVE ORDER 07-02 – The Washington Climate Change Challenge
ESSHB 2815 – Climate Framework Bill

WCI Partner Jurisdiction (no authorizing legislation . . . YET)

2020	1990 levels	10 MMT < 2004
2035	25% < 1990	30 MMT < 2004
2050	50% < 1990	50 MMT < 2004

OREGON

House Bill 3543

Codifies Governor Kulingoski's GHG reduction goals and establishes a Global Warming Commission

WCI Partner Jurisdiction (no authorizing legislation . . . YET)

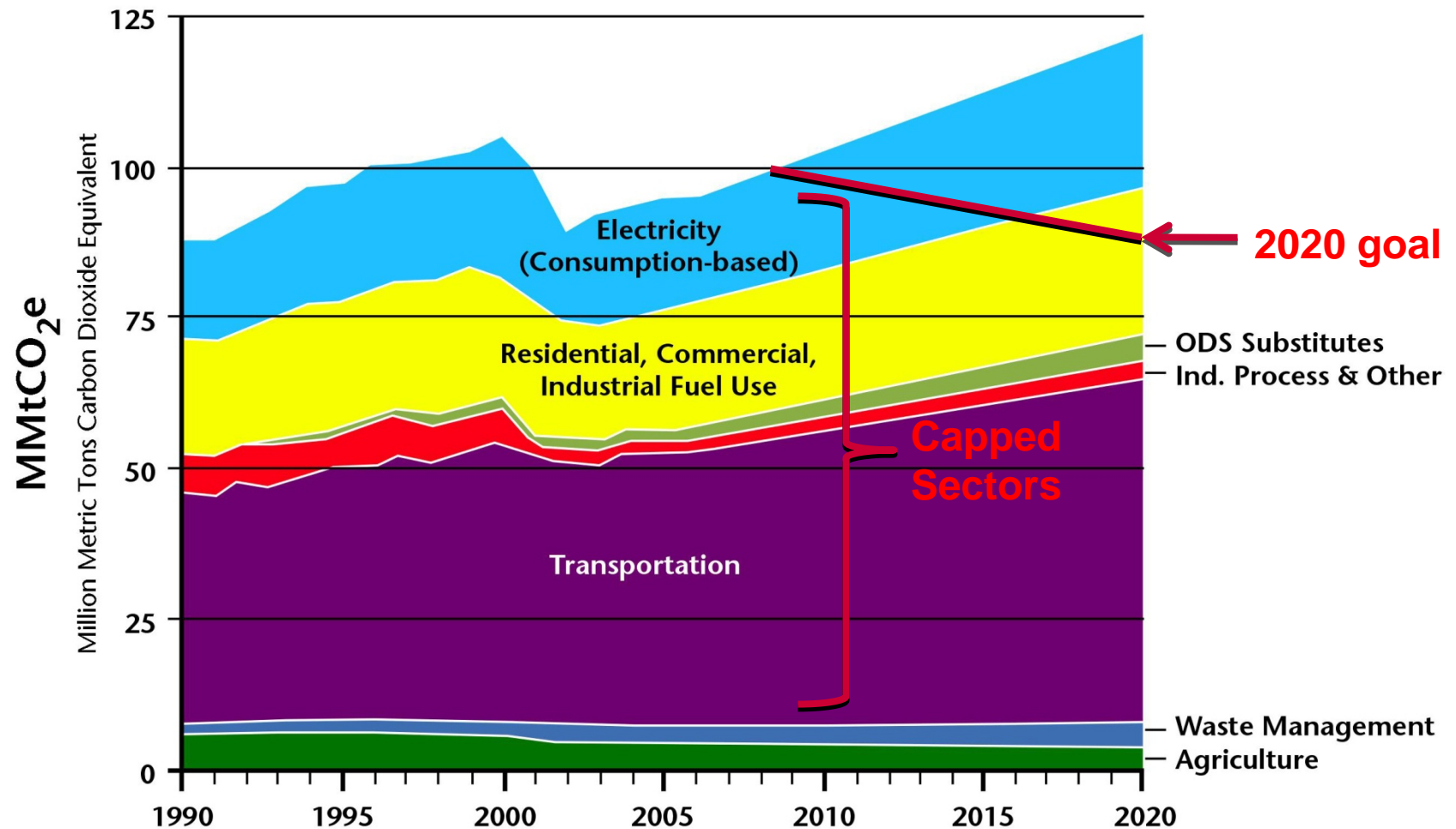
2020

10% < 1990 levels

2050

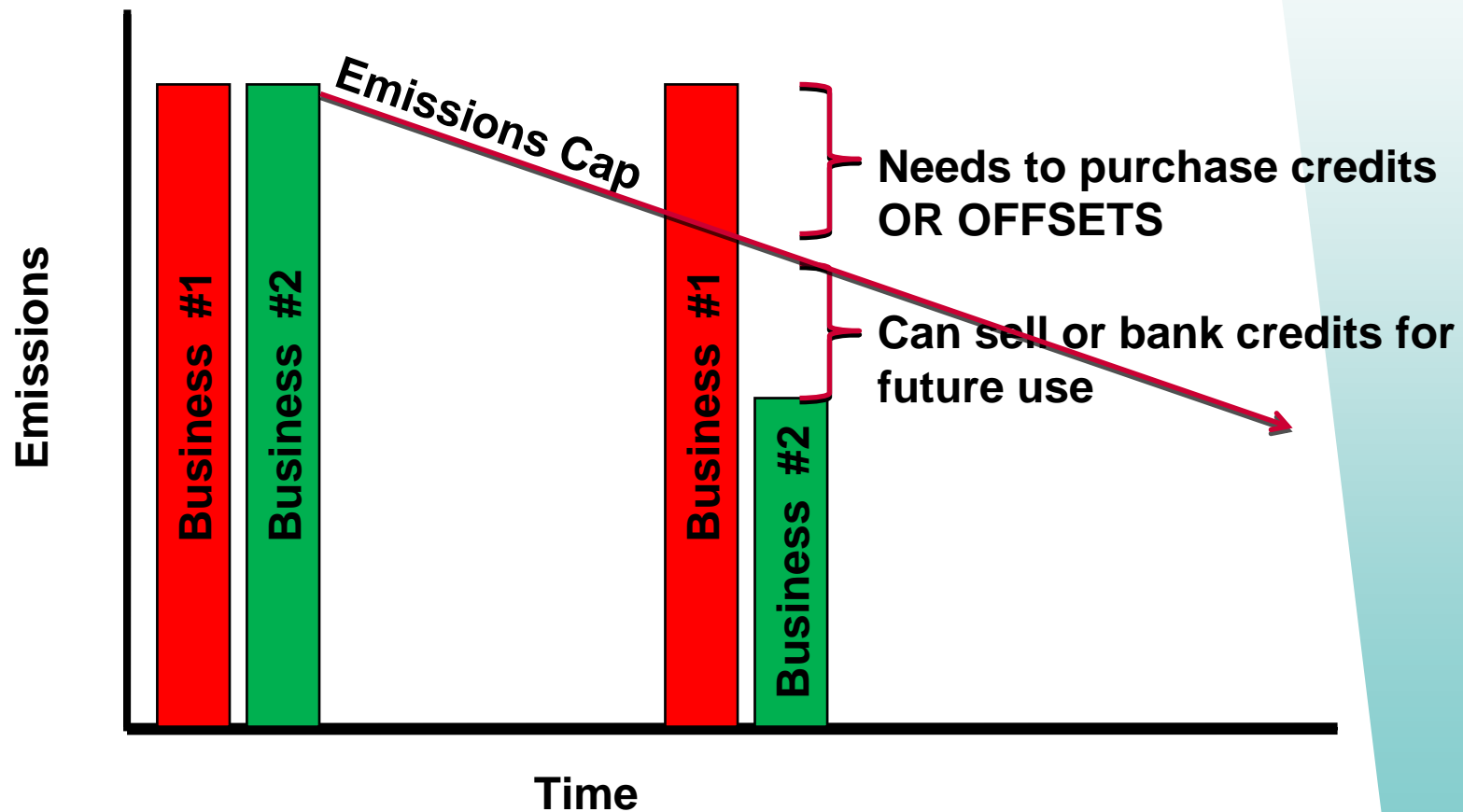
75% < 1990

Washington Gross GHG Emissions by Sector, 1990-2020: Historical and Projected



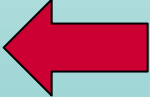
Source: 2007 CAT Report
www.ecy.wa.gov/climatechange

What is “Cap & Trade”?



ASCMW Recommendations: Potential for Agriculture GHG Mitigation

Development of Carbon Offsets in a Cap and Trade System

- **Conservation Lands (CO₂) ~ 1.13 MMtCO₂e**
Managed Grazing Lands (CO₂) ~ 2.29 MMtCO₂e
- **Precision Farming (N₂O) ~ .25 MMtCO₂e**
- **Anaerobic Digesters (CO₂) & (N₂O) ~ 2.6 MMtCO₂e** 
- **Agricultural Carbon Management (CO₂) & (N₂O) ~ .69 MMtCO₂e**

http://www.ecy.wa.gov/climatechange/2008FA_agr.htm

Development of Potential Offsets Related to Anaerobic Digesters

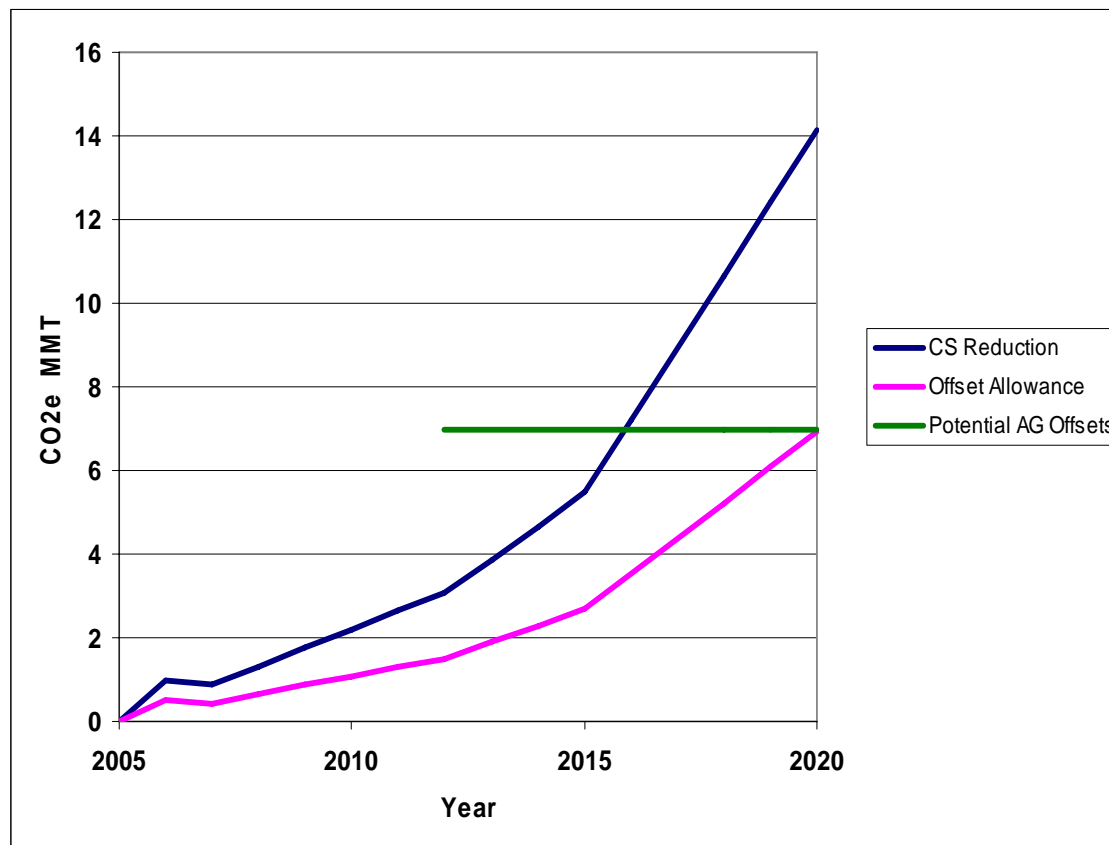
- **Capture methane from stored manure**
- **Capture methane related to co-digestion of OFMSW**
- **Displace indirect CO₂ emissions through use of AD co-products, including** generated electricity, pipeline-quality natural gas, transportation and boiler fuels, and conversion to other chemical forms (such as ammonia and methanol).

Summary of Selected AD Offsets

AD Activity	Offset Basis	Offset Potential
Manure Digestion	Captured Methane	0.5 MMT CO ₂ e/year
OFMSW Co-digestion	Captured Methane	1.9 MMT CO ₂ e/year
Electrical Generation	Displaced fossil fuel-based CO ₂ emissions	0.1 MMT CO ₂ e/year
Nutrient Recovery	Displaced fossil fuel-based CO ₂ emissions	0.1 MMT CO ₂ e/year
TOTAL		2.6 MMT CO₂e/year

Potential scope of the WCI offset market?

Hypothetical example of how offset limitations may effect Washington Ag



Washington Department of Ecology co-digestion rule-making process

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